CECADD

PLOTTING GUIDE FOR AUTOCAD 2002

USING TEMPLATES, LAYOUTS, AND VIEWPORTS

PLOTTING GUIDE FOR
ENGINEERING LAYOUTS USING VIEW PORTS

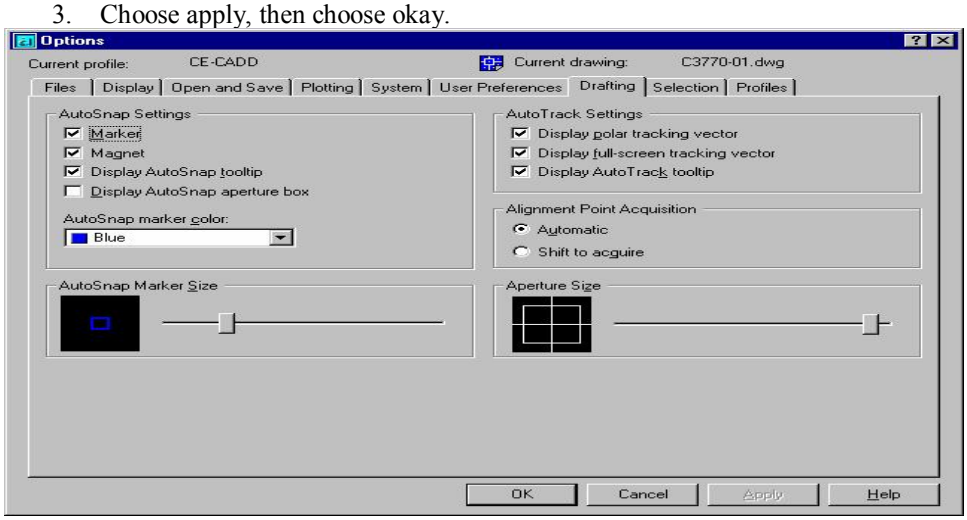
MONOCHROME PLOTTING

System Defaults

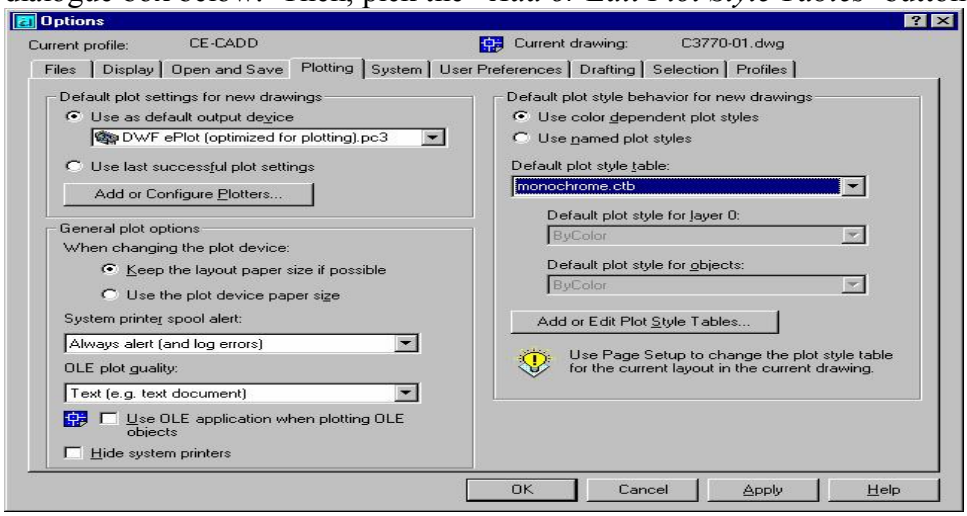
A. You may want to change the *Autosnap* marker color from the default yellow to green, blue or some other color that shows up on a white background.

To change the Autosnap marker

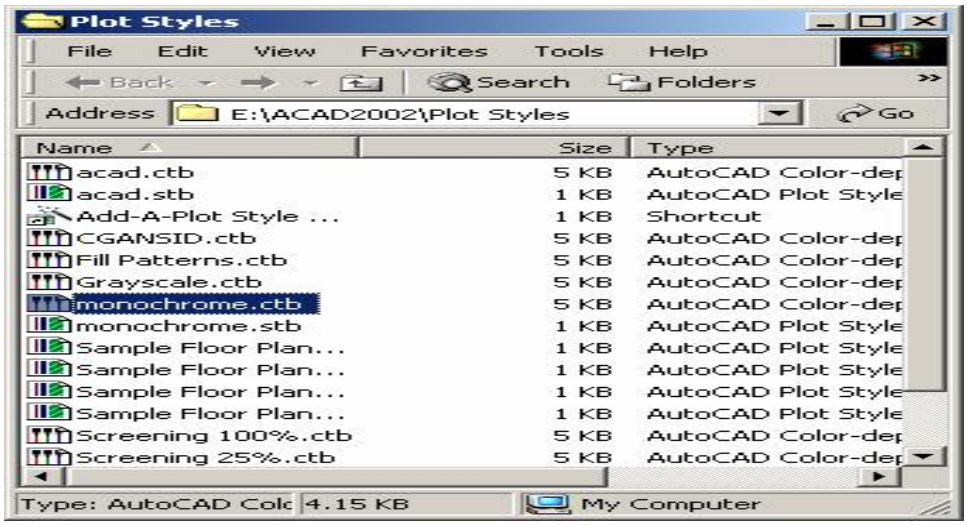
1. Under the Acad *Tools* menu, choose *Options*.
2. In the options dialogue box, *Drafting tab*, under AutoSnap Settings, select an autosnap marker color.
3. Choose apply, then choose okay.



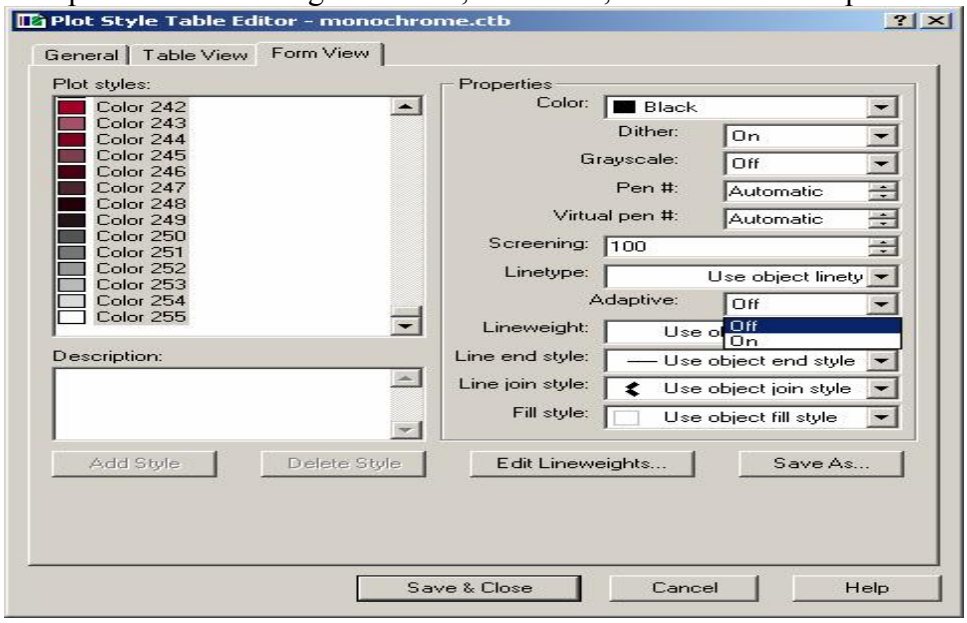
B. On the *Plotting tab*, pick `*Use color dependent plot styles*` radio button and select `*monochrome.ctb*` as the *Default plot style table* to use. The settings should follow the dialogue box below. Then, pick the `*Add or Edit Plot Style Tables*` button.



C. Select *monochrome.ctb*



D. Highlight and select all 255 colors. Then, under the Properties section, find the *'ADAPTIVE'* setting and change it to OFF. Press *'Save & Close'* This permits the drawing of Hidden, centerline, other dashed line paatterns.

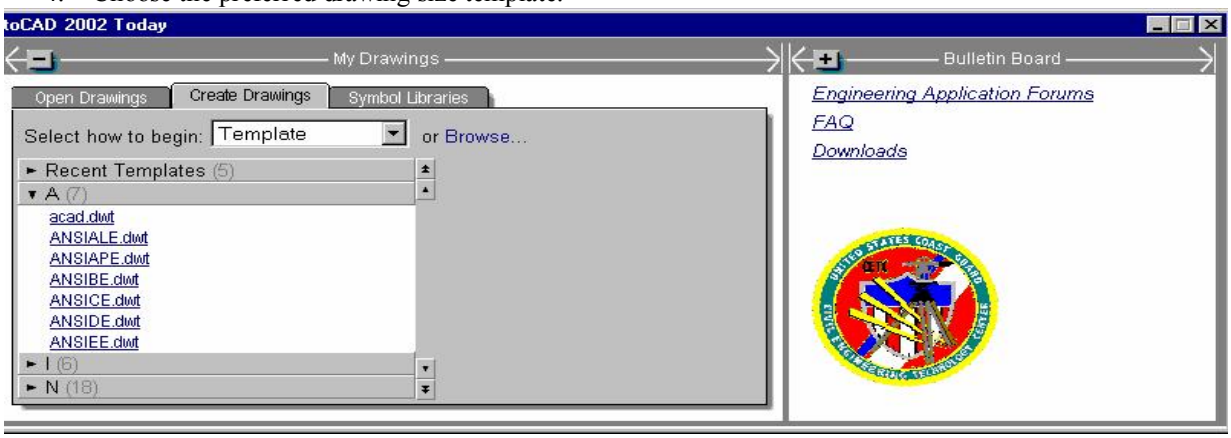


Setup for New Drawings

A. Using Autocad Today or Acad menu *File New*/*icon New* option, choose the preferred drawing size template located in the E:\Acad2002\Template directory.

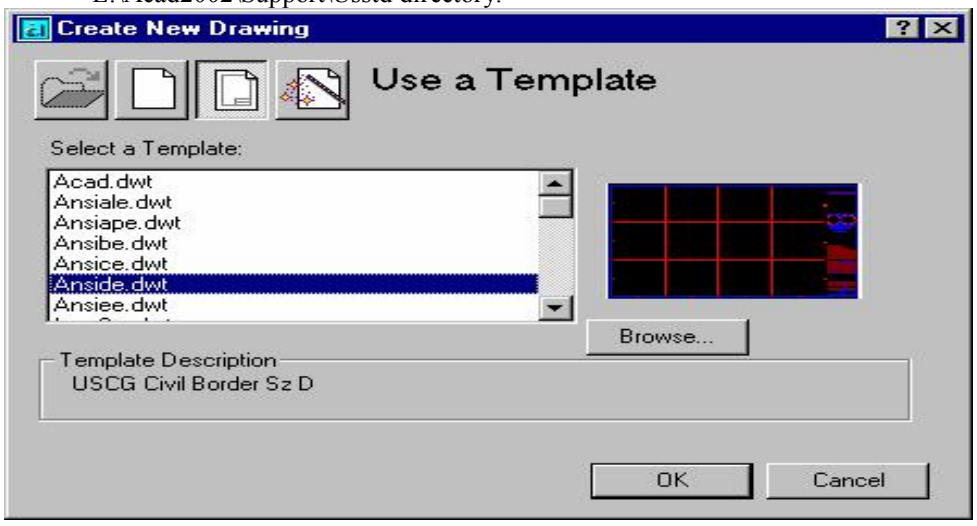
To choose a template using Autocad Today

1. Under the tools menu, choose Today.
2. In the Today window, under My Drawings, choose create drawings tab.
3. From the Select how to begin list, choose Template.
4. Choose the preferred drawing size template.



To choose template without Autocad Today.

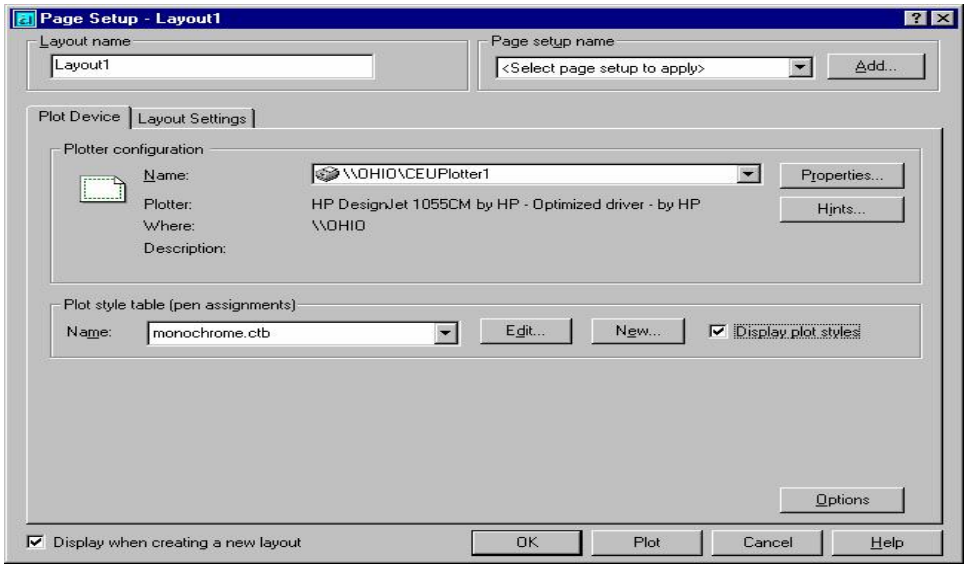
1. From the File menu, choose New.
2. In the create new drawings dialogue box, choose the preferred drawing size template located in the E:\Acad2002\Support\Usstd directory.



Recall that if you are at the Acad command line after picking the *New* option, you may press the *tilde key* to invoke a *file dialog* window to locate the drawing templates.

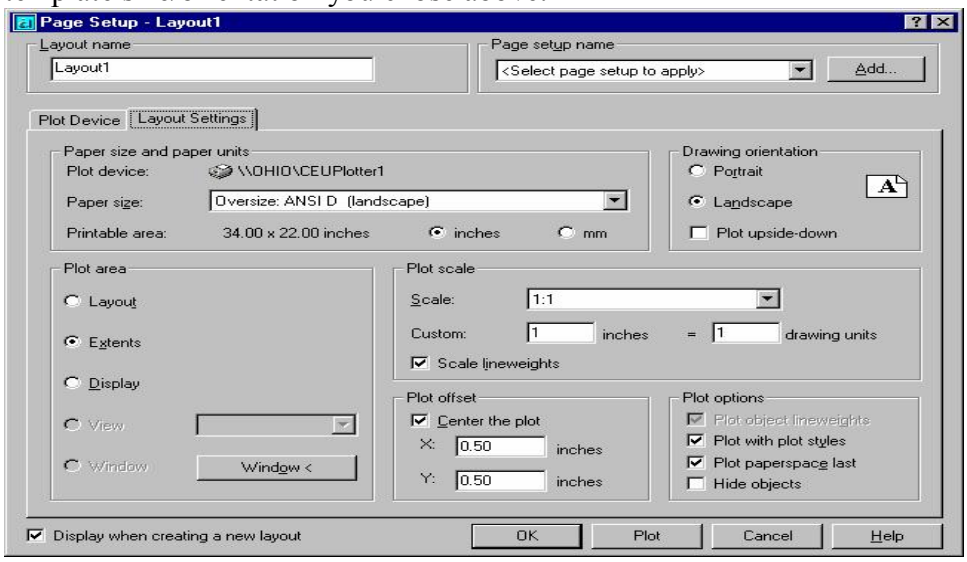
B. After opening the new drawing, select and right click the *Layout tab* and pick *Page Setup*.

C. On the *Page Setup* window, pick the *Plot Device tab* and verify that *monochrome.ctb* is chosen as the *Plot Style Table*.



D. Switch to the *Layout Settings tab*.

E. In the *paper size area* on the *Layout Settings* dialog, choose the paper that corresponds to the template size/orientation you chose above.



- **For an HP 1055 DesignJet, you probably have to choose *Oversize* ansi paper. This ensures that the drawing borders are within the plotting area. The predefined Ansi sheet for that plotter is slightly smaller in plot area than we desire. If you are using the CG civil D size border, pick *oversize Ansi D* in *Layout Settings*. Also make sure to choose *Landscape* or *Portrait* according to the plotter/paper combination available to you.**

- **For an Oce' 9400 monochrome plotter, choose the plain size sheet. If you are using the CG civil D size border, pick *D size sheet* in *Layout Settings*. Also make sure to choose *Landscape* or *Portrait* according to the plotter/paper combination available to you.**

F. Under *Plot Area*, choose *Layout* or *Extents* (same thing with sheet template).

G. Under *plot scale* choose 1:1 (1 inch = 1 dwg unit) since the layout template is full size.

- ***Plot offset*** **may or may not be necessary depending upon your plotter.** ***Scale lineweights*** **may be checked although it isn't necessary since the scale is 1:1.**

H. Finally, `*Plot with plot styles*` and `*Plot object lineweights*` radio buttons should be checked.

TO BEGIN DRAWING

A. Switch to Model Space (Mspace) to start drawing.

The following advice is offered although not mandatory.

In order to keep the correct scale in the Layout and maintain correct text heights, a good method to ensure this is to create a *guide rectangle* that is the size of the Layout template *drawing area* (for full view plotting). Keep your Mspace drawing within those boundaries and establishing a correct scale for the paper view (layout) becomes simple. You should create both the Layout ViewPort (vport) and guide rectangles on a `no-plot` layer such as the one named `*G-ANNO-NPLT*`, and make sure to edit that layer's properties to *Do Not Plot*.

As an example, choosing the D size template (most common), the drawing area on the paper is 29w x 21h. You should have some idea of the scale you will need to create this drawing. Let's say you decide ¼"=1'-0" is the scale you want. This provides you with a working area on paper of 116'w x 84'h. To set this up you need to set the Acad variable "*dimscale*" to a value of 48. (corresponds to 1" paper = 48" model)

To change the Dimscale

At the command line, type the word *dimscale* and press enter OR

1. From the tools menu, choose inquiry, setvariable.
2. At the command prompt, enter the word dimscale.

Then either accept or enter a new value for the dimscale.

Setting Text Height

All text and dimension text must be scaled appropriately as well. If the required text height on paper is 0.100", then the text height must be (0.1 * dimscale) = 4.8" in Mspace for a scale of 48.

Setting Linetype Scale

At the command line, type the word *'LTSCALE'* and press enter.
The *'LTSCALE'* will normally be the same as the *'Dimscale'* for use in *Mspace*.
Then either accept or enter a new value for the *'LTSCALE'*.

When working in *Layout (Pspace),* you must set *'LTSCALE'* to 1.0.

This makes sure that centerlines, hidden lines, dashed lines plot with the proper spacing.
If in Pspace your dashed lines appear to be solid, make sure that the plotstyle table you are using has ADAPTIVE property turned OFF for all 256 colors. If the space between dashes seems to be excessively large, *'LTSCALE'* is probably not 1.0.

When you switch back to Mspace, you must reset the *'LTSCALE'* to the *'Dimscale'* value.

To make a full size *guide rectangle* in Mspace ()

1. In Mspace, make the NPLT layer the current layer.
2. Either on the draw toolbar, or the draw menu, pick rectangle.
3. At the command prompt specify first corner point at 0,0.
4. The other corner is the size of the working area according to dimscale and layout template. From the example, the template gave a drawing area of 29w x 21h.

   At the ¼" scale, we calculated an area of 116'w x 84'h (116'-0",84'-0"). This is the second corner of the rectangle in architectural units. In decimal this is 29*48 by 21*48 (1392,1008). You may want to put an annotation near this rectangle denoting scale and drawing size or area being covered.

To set up the full size Layout *vport*

1. Switch to the *Layout tab*.
2. Pick Acad menu item *View*, *Viewports*, *New Viewports* or 1 *Viewport*.
   The command line waits for you to pick the *corners* of the vport area.
3. Choose the lower left corner border intersection as one point.

Pick the intersection of the upper borderline and the INNER vertical line of the sheet titleblock as the other point.

This is the paper dwg area rectangle corresponding to the scaled up dwg area rectangle you made in Mspace.

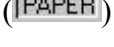
B. While still in Layout mode, switch the drawing to what is called '*floating model space*' by clicking the PAPER/MODEL () button on the right side of Acad's *bottom status bar*.
It will switch to ().
The vport outline will highlight.

You are now in Mspace edit/draw mode inside that vport window. In this mode you may now set the correct scaling for plotting.

SYNCHRONIZING VIEWPORT/MODEL SPACE SCALING

A. *Zooming to the proper expanse* in Mspace is where scale synchronization to paper plot takes place.

B. Pick *Zoom Window* () and choose the lower left and upper right corners of the NPLT rectangle you created in Mspace. The rectangle area fully fills the vport.

You are now scaled correctly for plotting as long as you continue using the ¼" scale in Mspace. It may be a good idea to switch the Layout back to PAPER () mode from floating Mspace now.

C. Switch to the Model Space tab to create your drawing model. You should also now select an appropriate layer for drawing.

MULTIPLE VIEWPORTS

Acad has preset viewport configurations available under the *Views menu*.

To create your own vport setup.

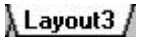
1. In the view menu, choose viewports, *Object* or *Polygonal.*
2. *Object*: Pick an object OR
3. *Polygonal:* Pick a start point and continue picking points. Press enter when finished.

   These viewports can be any shape you draw.

Following the methods described above, you may use multiple views at different scales on one sheet, all keeping the correct text heights. Vports can be different shapes. When you create vports less than full size, try to use easy to remember sizes such as 5"w x 3"h.

Remember to use the correct text heights in each differently scaled region in Mspace.
Remember to create vports and guides on the NPLT layer. eg,

A. Make the NPLT layer current.
   Create the proper sized NPLT rectangle in Mspace according to the scale being used in that region of Mspace. ¼" = 1' = 48: -- 5x3 rectangle is 240x144 or 20'x12'

B. Switch to Layout
   Pick a *Layout tab.* 

   Verify you are in Pspace and not in floating Mspace.

C. Use the *Rectangle* command to create a 5"x3" rectangle and place it on the sheet. Next,
   Pick Acad menu items *View,Viewports,Object*.
   The command line is waiting for your input.
   Pick the rectangle you just created on the Layout sheet.
   (You could have created a circle or other shape and used that for the vport)

D. Alternatively, pick Acad menu item *View,Viewports,Polygonal Viewport*.
   The command line is waiting for your input.
   Pick your start point and create the 5"x3" rectangle using relative commands @5<0,@3<90,@5<180,cl.

E. Switch to floating Mspace inside that 5"x3" vport by clicking the status bar button from PAPER to MODEL. 

F. Zoom Mspace to the corners of the 20'x12' rectangle you created there. (Synchronize)

G. Back in Paper mode, create a second NPLT vport of 10"x10" on the same Layout sheet.

H. If the Mspace scale for this view area is 1/8"=1' (96), it would backet an area in Mspace of 80'x80'. Create the NPLT rectangle in Mspace 80'x80'. For a text plot height of 0.1", text height should be set to 9.6" when working in this region of Mspace.

J. In Layout floating Mspace mode, synchronize the Mspace NPLT rectangle to the vport using Zoom Window.

Summary
In the Layout PAPER view, the two text heights from both differently sized and scaled vports would be the same while the model areas were at different scales. You may move the individual vports anywhere on the Layout PAPER sheet.

EXISTING DRAWINGS

(Any prior to April 2002)

A. Open the existing drawing.

Verify it has been upgraded to CECADD 6.0. (see your CADD Mgr.)

B. *After that, run the line weight converter as required to assign lineweights to entities.*

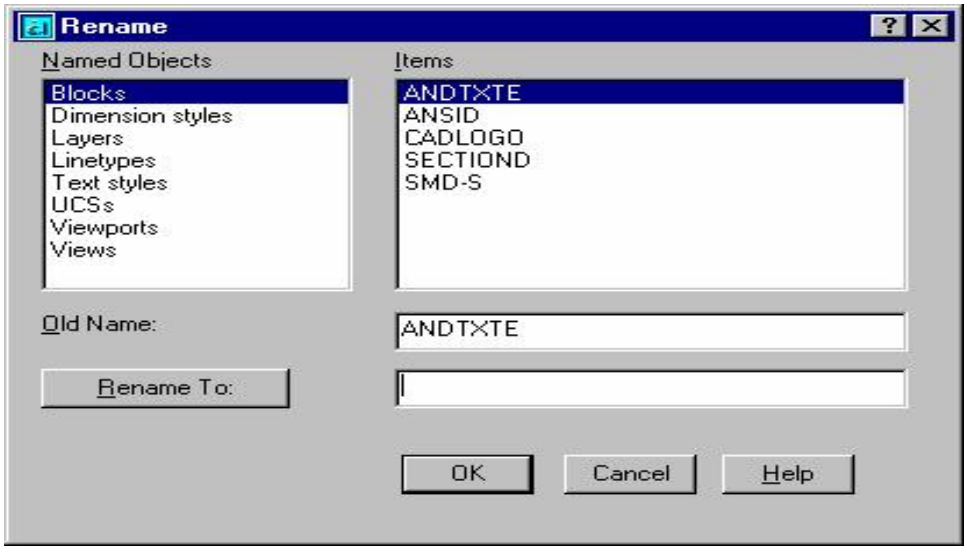
C. It is now necessary to either *rename or delete and purge the existing border sheet and titleblock*. This is required because the new CECADD templates use the same block names as the older drawings, but the block definitions are slightly different.

The old definitions *must be RENAMED orDELETED and PURGED* from the drawing.

It is recommended that you rename the old titleblock and the old bordersheet to temporary names so you can retain old data for reference while setting up a new titleblock and layout. Delete and purge the renamed blocks when finished using them.

To rename the old border and title block

1. Type RENAME on the command line.
2. In the Rename dialogue box under Named Objects, pick Blocks.



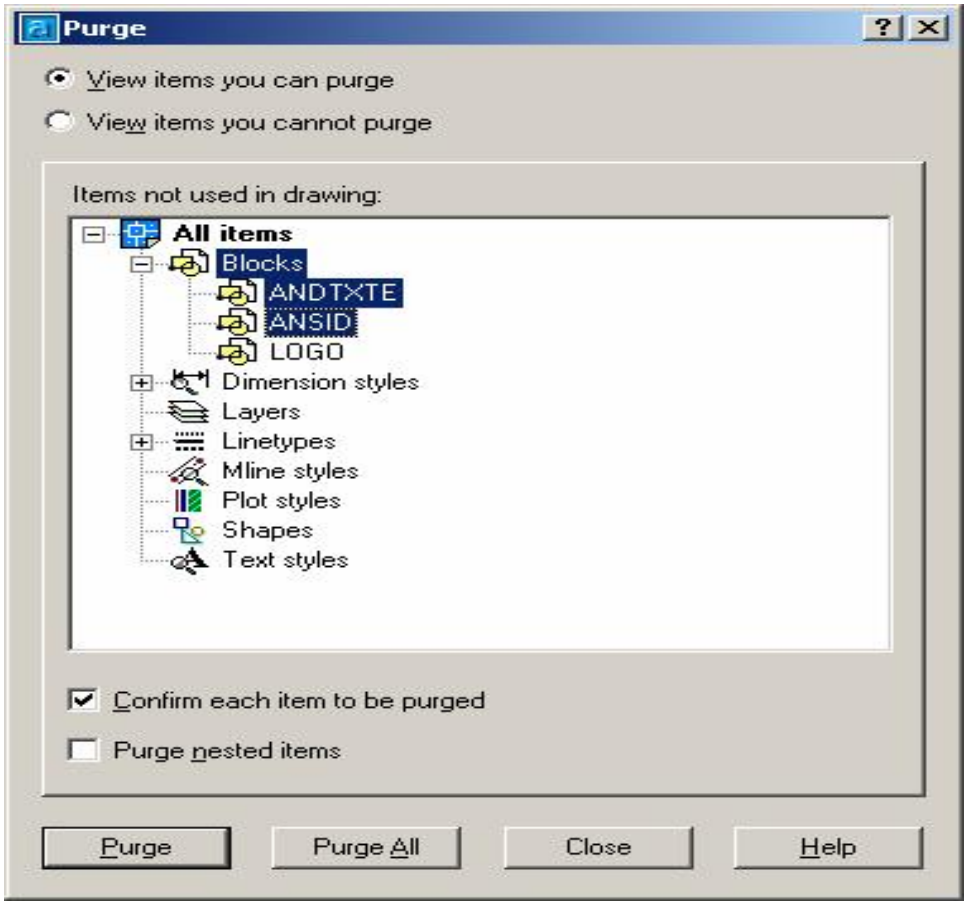
3. Pick border name from the Items box (ansial, ansiap, ansib, ansic, ansid, ansie)
4. In the 'Rename To' edit box, type in a new name such as ansidOLD.
5. Press the [Rename To] button.
6. Pick the titleblock name (andtxte).
7. In the 'Rename To' edit box, type in a new name such as andtxteOLD.
8. Press the [Rename To] button.
9. Press [Cancel] or [OK] and exit.

C. If you deleted instead of renaming, purge the old definitions now.

At the command line type *PURGE*

OR

Use Acad menu items *File,Drawing Utilities,Purge*



The Purge dialog box appears
Double click Blocks
Hold down the Control [Ctrl] key
Pick both ANDTXTE and ANSID with the mouse
Let go of the control key. Both blocks will be highlighted.
Click the Purge button and confirm the purge
Click the Close button.

D. Now you can add the new CECADD Layout template.

Switch to the Layout view tab

Right click the tab and pick *From Template*. Choose the appropriate size for the original dwg.

Check the Page Layout settings and adjust as necessary for monochrome output style.

Create the desired size Layout vport and zoom on the old titleblock to gather the data

Transfer it to the new Layout titleblock (CECADD title wizard helps here).

E. Switch to Mspace or floating Mspace.

Obtain the current dimscale setting. Check text heights to make sure they are in line with the dimscale setting. What you do next depends on the version of the drawing you have opened.

If it was an R13+ drawing with the CECADD V6 border sheet in Mspace, create the NPLT rectangle using the *drawing area corners* of that border sheet since it is the same as the new templates.

If it was a pre-R13 SMD style border sheet, create the NPLT rectangle using calculated sizes based on Layout drawing area and the Mspace dimscale as is done for a new drawing.

F. After setting up the new Layout vport and titleblock, you can delete and purge the temp titleblock and border as shown above. There shouldn't be a title block in Mspace any longer, and this will avoid confusion in the file management database. For the older SMD style sheets, move the Mspace items so that they all fit within the NPLT rectangle. The newer V6 drawings will already be in the NPLT rectangle.

COLOR PLOTTING

Uncheck `*Plot with plotstyles*` in *Layout Settings, Page Setup*. The plot will be in color.

PLOTTING NOTES

HIDDEN/CENTER/DASHED LINE PLOTTING

When working in *Layout (Pspace),* you must set *'LTSCALE'* to 1.0.
This makes sure that centerlines, hidden lines, dashed lines plot with the proper spacing.
If in Pspace your dashed lines appear to be solid, make sure that the plotstyle table you are using has ADAPTIVE property turned OFF for all 256 colors. If the space between dashes seems to be excessively large, *'LTSCALE'* is probably not 1.0. Set it to 1.0.
When you switch back to Mspace, you must reset the *'LTSCALE'* to the *'Dimscale'*or previous value.

PSPACE/LAYOUT BASED TEXT, NOTES, DIMENSIONS

You may create Notes, Legends, Vicinity Maps, Drawing Indices, Instructions, and so forth. What this does is let you create these thing at the plotted 1:1 scale, so you don't need to be concerned with text heights. (simply set to 1/4th ~ 1/10th as necessary when creating).
In the case of dimension lines, make sure to create these as *'Associated'* dimensions and select an object to which the dimension belongs. This is a new feature in Acad. If a dimensioned item is shortened or lengthened in the measured dimension, the dimension text will change to the new value even though this resides in Pspace. Under the *'Acad Menu'* item *'Tools'*, at the bottom pick *'Options'* and select the *'User Preferences'* tab in the *'Options window'*. At the bottom right side of this window, check the *'Make New Dimensions Associative'* check box and press OK.

COPYING TEXT FROM MSPACE TO PSPACE/LAYOUT

You can move Notes, Legends, and so forth from Mspace to Pspace by using the *'copyclip''* function. Under the *'Acad Menu'* item *'Edit'*, pick *'Copy'* and then select the items you want to copy. Switch to Layout and under the *'Acad Menu'* item *'Edit'*, pick *'Paste as Block'*. Choose the insert point. You will have to scale this block by a factor of (1/Dimscale). Your note should then be at the correct text height for plotting. You should now delete the note from Mspace.

EXAMPLE CECADD DRAWING SHEET AREAS AND SCALES

Drawing Size	**Drawing Area**	**1/16"**	**3/32"**	**1/8"**
A size portrait	7.5"w x 8.5"h	120'x136'	80'x91'	60'x68'
A size landscape	10"w x 6.5"h	160'x104'	107'x69'	80'x52'
B size	12"w x 10"h	192'x160'	128'x107'	96'x80'
C size	17"w x 15.8"h	272'x253'	181'x169'	136'x126'
D size	29"w x 21"h	464'x336'	309'x224'	232'x168'
E size	38.61"w x 32.67h	618'x523'	412'x349'	309'x261'

Drawing Size	**Drawing Area**	**5/32"**	**3/16"**	**1/4"**
A size portrait	7.5"w x 8.5"h	48'x54'	40'x45'	30'x34'
A size landscape	10"w x 6.5"h	64'x42'	53'x35'	40'x26'
B size	12"w x 10"h	77'x64'	64'x53'	48'x40'
C size	17"w x 15.8"h	109'x101'	91'x84'	68'x63'
D size	29"w x 21"h	186'x134'	155'x112'	116'x84'
E size	38.61"w x 32.67h	247'x209'	206'x174'	154'x131'

Drawing Size	**Drawing Area**	**3/8"**	**1/2"**	**5/8**
A size portrait	7.5"w x 8.5"h	20'x23'	15'x17'	12'x14'
A size landscape	10"w x 6.5"h	27'x17'	20'x13'	16'x10'
B size	12"w x 10"h	32'x27'	24'x20'	19'x16'
C size	17"w x 15.8"h	45'x42'	34'x32'	27'x25'
D size	29"w x 21"h	77'x56'	58'x42'	46'x34'
E size	38.61"w x 32.67h	103'x87'	77'x66'	62'x52'

Drawing Size	Drawing Area	3/4"	7/8"	1"
A size portrait	7.5"w x 8.5"h	10'x11'	8.5'x9.7'	7.5'x8.5'
A size landscape	10"w x 6.5"h	13'x9'	11'x7.4'	10'x6.5'
B size	12"w x 10"h	16'x13'	13.7'x11'	12'x10'
C size	17"w x 15.8"h	23'x21'	19.4'x18'	17'x15.8'
D size	29"w x 21"h	39'x28'	33'x24'	29'x21'
E size	38.61"w x 32.67h	51'x44'	44'x37'	38.6'x32.67'

Drawing Size	Drawing Area	1:5	1:10	1:20
A size portrait	7.5"w x 8.5"h	38'x43'	75'x85'	150'x170'
A size landscape	10"w x 6.5"h	50'x33	100'x65'	200'x130'
B size	12"w x 10"h	60'x50'	120'x100'	240'x200'
C size	17"w x 15.8"h	85'x79'	170'x158'	340'x316'
D size	29"w x 21"h	145'x105'	290'x210'	580'x420'
E size	38.61"w x 32.67h	193'x163'	386'x327'	772'x654'

Drawing Size	Drawing Area	1:30	1:40	1:50
A size portrait	7.5"w x 8.5"h	225'x255'	300'x340'	375'x425'
A size landscape	10"w x 6.5"h	300'x195'	400'x260'	500'x325'
B size	12"w x 10"h	360'x300'	480'x400'	600'x500'
C size	17"w x 15.8"h	510'x474'	680'x632'	850'x790'
D size	29"w x 21"h	870'x630'	1160'x840'	1450'x1050'
E size	38.61"w x 32.67h	1158'x980'	1544'x1307'	1930'x1633'

Drawing Size	Drawing Area	1:60	1:100	1:200
A size portrait	7.5"w x 8.5"h	450'x510'	750'x850'	1500'x1700'
A size landscape	10"w x 6.5"h	600'x390'	1000'x650'	2000'x1300'
B size	12"w x 10"h	720'x600'	1200'x1000'	2400'x2000'
C size	17"w x 15.8"h	1020'x948'	1700'x1580'	3400'x1580'
D size	29"w x 21"h	1740'x1260'	2900'x2100'	5800'x4200'
E size	38.61"w x 32.67h	2317'x1960'	3861'x3267'	7722'x6534'

Drawing Size	Drawing Area	1:300	1:400	1:500
A size portrait	7.5"w x 8.5"h	2250'x2550'	3000'x3400'	3750'x4250'
A size landscape	10"w x 6.5"h	3000'x1950'	4000'x2600'	5000'x3250'
B size	12"w x 10"h	3600'x3000'	4800'x4000'	6000'x5000'
C size	17"w x 15.8"h	5100'x4740'	6800'x3160'	8500'x7900'
D size	29"w x 21"h	8700'x6300'	11600'x8400'	14500'x10500'
E size	38.61"w x 32.67h	11583'x9801'	15444'x13068'	19305'x16335'

Drawing Size	Drawing Area	1:1000	1:2000
A size portrait	7.5"w x 8.5"h	7500'x8500'	15000'x17000'
A size landscape	10"w x 6.5"h	10000'x6500'	20000'x13000'
B size	12"w x 10"h	12000'x10000'	24000'x20000'
C size	17"w x 15.8"h	17000'x15800'	34000'x31600'
D size	29"w x 21"h	29000'x21000'	58000'x42000'
E size	38.61"w x 32.67h	38610'x32670'	77220'x65340'